Primary Reference or New Data Review Sheet

I. Citation or Source:

Banks, R.C. 1979. Human related mortality of birds in the United States. U.S. Fish & Wildlife Service, National Fish and Wildlife Lab, Special Scientific Report – Wildlife No. 215:1-16. GPO 848-972.

Source Type (check one): Mortality Summary

Peer-reviewed Paper √ **Other (specify):**
Agency Report ____
Conference Proceedings ____

II. Objectives (list)

Summarize avian mortalities from different sources. Banks indicates that mass mortalities are of little value in establishing an estimate of avian kills under "normal conditions." Estimates 2,500 bird kills/tower/year. No mass mortalities in or west of Rocky Mountains. If only half of towers presents hazards, 1979 estimates 1,250,000 birds killed annually in U.S.

III. Species

Addressed mortality factors by family or groups.

IV. Study Methods (briefly list)

N/A

V. Duration of Study N/A

Duration (provide dates):

Single Year _____
Multiple Years _____

Seasons:

Spring Migration ____ **Both** ____
Fall Migration ____ **Yearlong** ____

VI. Carcass Search Methods (if applicable) N/A

Search Conditions: Daily ____ Weekly ____ Only after overcast nights with a low ceiling or storm events ____

Other Periods (Describe):

Search Biases Evaluated, Including Observer Bias and Scavenger Activity? Yes ____ No √

Search Area Described? Yes ____ No √

VII. Analytical and Statistical Methods N/A

Statistical method(s) used: (list)

N/A

Comments:

VIII. Number of Tower Sites: N/A **Proximity:**

IX. Behavioral Observations at the Tower: Yes _____ No √
Describe if applicable to statement or conclusion being evaluated.

X. Documentation of Weather Factors? Yes _____ No √
Describe if applicable to statement or conclusion being evaluated.

XI. Inclusion of Structural and Landscape Conditions? Yes ____ No √
Describe if applicable to statement or conclusion being evaluated.

XII. Brief Description of Results

Discusses overall bird mortality reports at communication towers to date. Most reports were of mass mortalities, which is of limited value in establishing annual mortality rates under "normal conditions." Estimates if only 50% of towers at that time presented an avian collision risk, an estimated 2.500 birds per tower could be affected, totaling an estimated 1,250,000 birds per year in the U.S. Vireonidae, Parulidae, and Fringillidae are the most frequently affected bird families.

XIII. Need for and Scope of Additional Studies (Only applicable if new data or study is provided.)

Are additional studies identified? Yes ____ No √ If yes explain and list studies.

XIV. Suggested Methods to Minimize Impacts (Only applicable if new data or study is provided.)

Are specific methods identified? Yes____ No √ If yes explain and list specific mitigative methods.

Primary Reference or New Data Review Sheet

I. Citation or Source:

Ball, L.G., K. Zyskowski, and G. Escalona-Segura. 1995. Recent bird mortality at a Topeka television tower. Kansas Ornithological Society Bulletin 46(4):33-36.

Source Type (check one): Incident report

Peer-reviewed Paper √ **Other (specify):**
Agency Report ____
Conference Proceedings ____

II. Study Objectives (list)

Monitoring number of bird kills and species recorded.

III. Species

Detailed species list: 2,808 bird mortalities; 91 species. Gray catbird and sora most common in Sep 1985. Orange-crowned warbler most common for October dates. A number of larger, water birds, wrens, kinglets, thrushes, vireos, warblers, sparrows, orioles, and other passerines recorded.

IV. Study Methods (briefly list)

Focus was to document otherwise rare occurrences of birds in area.

V. Duration of Study 4 events

Duration (provide dates):

Single Year _____
Multiple Years 25-26 Sep 1985, 30 Sep – 1 Oct 1986, 11-12 Oct 1986, 8-9 Oct 1994.

Seasons:

Spring Migration ____ **Both** ____
Fall Migration √ **Yearlong** ____

Primary Reference or New Data Review Sheet (cont'd)

VI. Carcass Search Methods (if applicable)

Search Conditions: Daily ____ Weekly ____ Only after overcast nights with a low ceiling or storm events ____

Other Periods (Describe): Based on events (four total).

Search Biases Evaluated, Including Observer Bias and Scavenger Activity? Yes ____ No √

Search Area Described? Yes ____ No √

VII. Analytical and Statistical Methods N/A

Statistical method(s) used: (list)

Comments:

VIII. Number of Tower Sites: 1 **Proximity:**

KTKA tower 4 km west of Topeka, Kansas.
439 m tall. Guyed. Incandescent (red?) lights.

IX. Behavioral Observations at the Tower: Yes _____ No √
Describe if applicable to statement or conclusion being evaluated.

X. Documentation of Weather Factors? Yes √ No _____
Describe if applicable to statement or conclusion being evaluated.

Low cloud ceiling following major decrease in wind speed and preceding temperatures falling. Only precipitation occurred 11-12 Oct 1986, which coincided w/ rain and light snow.

XI. Inclusion of Structural and Landscape Conditions? Yes ____ No √ **Describe if applicable to statement or conclusion being evaluated.**
XII. Brief Description of Results
No scientific data, but good information on potential effects to rare, threatened, or endangered species. Detailed species list.
XIII. Need for and Scope of Additional Studies (Only applicable if new data or study is provided.)
Are additional studies identified? Yes ____ No √ If yes explain and list studies.
XIV. Suggested Methods to Minimize Impacts (Only applicable if new data or study is provided.)
Are specific methods identified? Yes____ No √ If yes explain and list specific mitigative methods.

Primary Reference or New Data Review Sheet

I. Citation or Source:

Avery, M.L., P.F. Springer, and J.F. Cassel. 1978. The composition and seasonal variation of bird losses at a tall tower in southeastern North Dakota. American Birds 32(6):1141-1121.

Source Type (check one): Study

Peer-reviewed Paper √ **Other (specify):**
Agency Report ____
Conference Proceedings ____

II. Study Objectives (list)

Determine extent and seasonal variation of bird mortality.

III. Species

937 (partial sample) (1,075 mean annual)
102 species of birds; 46% neotropical migrants; predominantly vireos and warblers.
4, 298 estimated for 5 seasons 1971-73.

IV. Study Methods (briefly list)

Surveyed at dawn almost daily. Strata w/in 151 ft surveyed 100%.
Randomized sampling effort for 3 other concentric strata (302, 600, and 2,400 ft).
Total 8 sampling plots for each concentric circle (40.7 ft ea. side ea. plot).
Used nets on sampling plots.

V. Duration of Study: 3 years - nightly

Duration (provide dates):

Single Year _____
Multiple Years 1971-1973 (3 yrs)
Except for 7 days: daily @ dawn
30 Mar – 4 Jun (1972) 2 Apr – 2 Jun (1973)
8 Aug – 15 Nov (1972) 12 Aug – 3 Nov (1973)
(surveyed other adjacent days)

Seasons:

Spring Migration ____ **Both** √
Fall Migration ____ **Yearlong** ____

VI. Carcass Search Methods (if applicable)

Search Conditions: Daily √ Weekly ___ Only after overcast nights with a low ceiling or storm events ___

Other Periods (Describe):

Search Biases Evaluated, Including Observer Bias and Scavenger Activity? Yes √ No ___ Scavenger Study

Search Area Described? Yes √ No ___

Scavenger Study: planted 296 birds at various points over 4 seasons
Results: Range 2.4% carcass removal in spring 1972 (7.3% nightly); 17.6% carcass removal in spring 1973. Removal averaged 7.4% overall.

Marshy/grassland search area.

VII. Analytical and Statistical Methods

Statistical method(s) used: (list)

Predominantly descriptive study. Chi-square tests used to determine if kill rates of particular species or families varied w/ season.

Comments:

VIII. Number of Tower Sites: 1 **Proximity:**

U.S. Coast guard Omega Navigational Station – James River Valley; 3 km W. LaMoure, ND.
5 red, non-flashing, obstruction lights
4 red, flashing 700-W beacons
366-meter tower; guyed; 16 evenly spaced transmitting cables from top of antennae to a perimeter road 732 from tower.

IX. Behavioral Observations at the Tower: Yes _____ No √
Describe if applicable to statement or conclusion being evaluated.

X. Documentation of Weather Factors? Yes _____ No √
Describe if applicable to statement or conclusion being evaluated.

Primary Reference or New Data Review Sheet (cont'd)

XI. Inclusion of Structural and Landscape Conditions? Yes ____ No √
Describe if applicable to statement or conclusion being evaluated.

XII. Brief Description of Results

Consistent sampling effort; measured scavenger removal estimated @ 7.3% nightly (7.4% overall).
54% kills occurred in fall migration (Sep-Nov) = Stratum D (183-732 m from tower) suggest that most mortality caused by guy wires/transmitting cables farther from towers.
44% warblers and 11% vireos over half of mortalities recorded primarily in fall.
Fall mortalities typically not local breeders.
Wrens, icterids, and fringillids predominantly spring kills.

Spring mortalities commonly local breeding birds, inferring that local breeders more affected than migrants heading north. Hypothesize local breeders more selective in spring as compared to fall as to where perch after nights migration. Birds breed in habitats similar to Omega station are more prone to collisions. Also, diurnal collisions w/ local breeders may occur, particularly during inclement weather or poor visibility. Seasonal variation in species composition.

XIII. Need for and Scope of Additional Studies (Only applicable if new data or study is provided.)

Are additional studies identified? Yes ____ No √ If yes explain and list studies.

XIV. **Suggested Methods to Minimize Impacts (Only applicable if new data or study is provided.)**

Are specific methods identified? Yes____ No √ If yes explain and list specific mitigative methods.

Primary Reference or New Data Review Sheet

I. Citation or Source:

Avery, M.L., P.F. Springer, and J.F. Cassel. 1977. Weather influences on nocturnal bird mortality at a North Dakota tower. Wilson Bulletin 89(2):291-299.

Source Type (check one): Study

Peer-reviewed Paper √ **Other (specify):**
Agency Report ___
Conference Proceedings ___

II. Study Objectives (list)

Record weather influences on bird mortalities.

III. Species

~ 1, 064 birds collected.

IV. Study Methods (briefly list)

4 concentric strata (strata A = 100%; other strata lower percentage cover).

V. Duration of Study: 4 migrational seasons

Duration (provide dates):

Single Year _____
Multiple Years 1972-1973 (2 yrs)
30 Mar – 4 Jun (1972) 2 Apr – 2 Jun (1973)
8 Aug – 15 Nov (1972) 12 Aug – 3 Nov (1973)
nightly searches @ daybreak (except 7 days)

Seasons:

Spring Migration ___ **Both** √
Fall Migration ___ **Yearlong** ___

Primary Reference or New Data Review Sheet (cont'd)

VI. Carcass Search Methods (if applicable)

Search Conditions: Daily √ Weekly ____ Only after overcast nights with a low ceiling or storm events ____

Other Periods (Describe):

Search Biases Evaluated, Including Observer Bias and Scavenger Activity? Yes ____ No √

Search Area Described? Yes √ No ____

VII. Analytical and Statistical Methods

Statistical method(s) used: (list)

- Chi-square-goodness-of-fit test – w/in ea family; losses in entire peak periods were same proportion to number of nights in those categories.
- G-test – determine independence b/w cloud cover and distance of kill and b/w cloud cover and season.

Comments:

VIII. Number of Tower Sites: 1 **Proximity:**

U.S. Coast guard Omega Navigational Station – James River Valley; 3 km W. LaMoure, ND.
5 red, non-flashing, obstruction lights
4 red, flashing 700-W beacons
366–meter tower; guyed; 16 evenly spaced transmitting cables from top of antennae to a perimeter road 732 from tower.
Omega tower unique because of 16 transmitting cables - increase collision risk, particularly farther from base on clear nights.

IX. Behavioral Observations at the Tower: Yes √ No ____
Describe if applicable to statement or conclusion being evaluated.

Similar to Cochran and Graber 1958 and Avery et al., 1976.
Mortality information suggests behavioral differences that depict where families or group-level birds may be affected.

X. Documentation of Weather Factors? Yes √ No ____
Describe if applicable to statement or conclusion being evaluated.

Hourly weather reports from FAA Flight Service Station @ Jamestown (72 km N-NW of LaMoure).
Precipitation; wind speed and direction recorded.
On overcast nights – losses concentrated near the tower (and lights) in strata A and B; non-overcast nights – more evenly distributed.
Spring and fall – difference in mortality b/w overcast and non-overcast was statistically significant. Infers distance of losses from tower was influenced by cloud cover.

Primary Reference or New Data Review Sheet (cont'd)

XI. Inclusion of Structural and Landscape Conditions? Yes √ No ____
Describe if applicable to statement or conclusion being evaluated.

Marshy/grassland.

XII. Brief Description of Results

Consistent sampling effort, major fall kills followed cold fronts.
Table 1: 5 largest single-night losses in 1972-73; 4 of 5 nights overcast. Fall losses on overcast nights occurred w/in 12 hours of cold fronts, which is consistent w/ other studies (as listed). Spring kills more evenly distributed; no direct association w/ frontal movements; majority of kills occurred w/ favorable (SE) winds.
Ceilometer observations – majority of spring migration occurred w/ SE winds.
The percent of fall mortalities were higher than the percent recorded in the spring migration w/in 92 m of the tower; beyond 92 m this is reversed except in 1972. In summary, larger spring losses consistently occurred at greater distances from the tower than in the fall.
16 transmitting cables increase the collision risk. During clear (non-overcast) nights, birds avoided towers, but higher collisions recorded farther from tower.

Mortality data infer/suggest difference in bird strikes (number, location, weather conditions) relates to family or bird group.

XIII. Need for and Scope of Additional Studies (Only applicable if new data or study is provided.)

Are additional studies identified? Yes √ No ____ If yes explain and list studies.

Differences among various taxa of nocturnal migrants in responses to tall, lighted structures warrants further research. Conceivably, data may provide methods where losses to same species at towers could be reduced.

XIV. Suggested Methods to Minimize Impacts (Only applicable if new data or study is provided.)

Are specific methods identified? Yes____ No √ If yes explain and list specific mitigative methods.

Primary Reference or New Data Review Sheet

I. Citation or Source:

Avery, M.L., P.F. Springer, and J.F. Cassel. 1976. The effects of a tall tower on nocturnal bird migration – a portable ceilometer study. Auk 93(2):281-291.

Source Type (check one): Study

Peer-reviewed Paper √ **Other (specify):**
Agency Report ____
Conference Proceedings ___

II. Study Objectives (list)

Record bird behavior at and away from tower.
Examine bird distribution @ towers.
Monitor numbers of birds at and away from tower.
Record bird behavior near tower lighting.
Monitor movements.

III. Species

Three species frequently recorded at the tower: sora, common yellowthroat, and savannah sparrow.

IV. Study Methods (briefly list)

Nighttime observations of migrants using portable ceilometer technique.
Monitored/recorded weather conditions.
Used binoculars and spotting scope.

V. Duration of Study 4 nights/week

Duration (provide dates):

Single Year _____
Multiple Years 1972, 1973
18 April – 1 June (1972) 2 Apr – 31 May (1973)
19 Aug – 26 Oct (1972) 16 Aug – 27 Oct (1973)

Seasons:

Spring Migration ____ **Both** √
Fall Migration ____ **Yearlong** ____

Primary Reference or New Data Review Sheet (cont'd)

VI. Carcass Search Methods (if applicable)

Search Conditions: Daily ____ Weekly ____ Only after overcast nights with a low ceiling or storm events ____

Other Periods (Describe): 4 nights/week (see V.)

Search Biases Evaluated, Including Observer Bias and Scavenger Activity? Yes ____ No √

Search Area Described? Yes √ No ____

VII. Analytical and Statistical Methods

Statistical method(s) used: (list)

N/A

Comments:

VIII. Number of Tower Sites: 1 **Proximity:** N/A

U.S. Coast guard Omega Navigational Station – James River Valley; 3 km W. LaMoure, ND.
5 red, non-flashing, obstruction lights
4 red, flashing 700-W beacons
366–meter tower; guyed; 16 evenly spaced transmitting cables from top of antennae to a perimeter road 732 from tower.

IX. Behavioral Observations at the Tower: Yes √ No ____
Describe if applicable to statement or conclusion being evaluated.

"Fluttered/milled about" oriented mainly into wind (did not orient toward tower lights). Flight pattern: several wingbeats – brief pause – (whether transmitting or not). Foggy @ dawn 26 Aug 1973; 35 m near red tower lights – flew upwind, frequently pausing/fluttering ~20 m SE of tower – turn slightly – blown downwind ~ 50 m NW of tower – stopped and began slow flight upwind again. Counterclockwise – narrow elliptical path.

X. Documentation of Weather Factors? Yes √ No ____
Describe if applicable to statement or conclusion being evaluated.

Data grouped by season (spring or fall).
Within each seasonal group, sightings divided into overcast or nonovercast (clear or partly cloudy) classes.
Classes subdivided by location (at tower or 305 m to NE of tower).

XI. Inclusion of Structural and Landscape Conditions? Yes ____ No √
Describe if applicable to statement or conclusion being evaluated.

XII. Brief Description of Results

Overcast nights each season - number of migrants observed @ tower significantly greater than number observed 305 m to NE of tower. Clear nights – reverse was true. Partly cloudy nights – not significant in fall. Directional movements under various conditions; multiple seasons recorded. Overcast nights w/ clearing showed number birds sharply decreasing @ tower. Number of birds decreased/increased when lights turned off/on 22-23 Aug 1973. Inference: congregation of nocturnal migrants – orientation using celestial cues. More likely: reluctant to leave area of illumination when passing tower, particularly during inclement weather. Migrants may actively avoid tower on clear nights.

XIII. Need for and Scope of Additional Studies (Only applicable if new data or study is provided.)

Are additional studies identified? Yes ____ No √ If yes explain and list studies.

XIV. Suggested Methods to Minimize Impacts (Only applicable if new data or study is provided.)

Are specific methods identified? Yes____ No √ If yes explain and list specific mitigative methods.

Primary Reference or New Data Review Sheet

I. Citation or Source:

Crawford, R.L. and R.T. Engstrom. 2001. Characteristics of avian mortality at a north Florida television tower: A 29-year study. J. Field Ornithol. 72(3):380-388.

Source Type (check one): Study

Peer-reviewed Paper √ **Other (specify):**
Agency Report ____
Conference Proceedings ____

II. Study Objectives (list)

Determine extent of avian mortality over long study period.
1) Summarize 29 years of data.
2) Examine effects of tower height on avian mortality.
3) Evaluate effects of scavengers on number of mortalities detected.

III. Species

44,007 bird kills of 186 species over 29-year period.
> 94% were neotropical migrants; red-eyed vireo #1 mortality recorded.
After tower shortened, only 32 bird mortalities recorded Oct 1999 (27 visits); 14 recorded Oct 2000 (18 visits)
Of 41 families; Parulidae and Vireonidae = 64%; primarily neotropical migrants/nocturnal migrants.
99% of mortality concentrated in only 15 of the 43 total families recorded at site.

IV. Study Methods (briefly list)

Attempted daily surveys at dawn.
Descriptive study; information not quantified.

V. Duration of Study: 29 years

Duration (provide dates):

Single Year _____
Multiple Years 1955-1967-1983 (29 years)
Main part of study concluded 1985.
284-ft tower also checked in Oct 1999 and 2000 for comparison w/ taller tower for same period.

Seasons:

Spring Migration ____ **Both** √
Fall Migration ____ **Yearlong** ____

Primary Reference or New Data Review Sheet (cont'd)

VI. Carcass Search Methods (if applicable)

Search Conditions: Daily √ Weekly ____ Only after overcast nights with a low ceiling or storm events ____

Other Periods (Describe):

Search Biases Evaluated, Including Observer Bias and Scavenger Activity? Yes √ No ____

Search Area Described? Yes √ No ____

20-acre mowed area under tower and guy wires.

Aggressive scavenger removal using live trapping and poisons from 1955-1967 (13 years) and again 1974-1976 (3 years). Determined strong scavenger effect; reduced predator control resulted in 71% reduction in birds found.

VII. Analytical and Statistical Methods Largely descriptive

Statistical method(s) used: (list)

Used ANOVA to determine if kill rates changed when tower height increased from 669 to 1,010 feet. No effect reported.

Comments:

VIII. Number of Tower Sites: 1 **Proximity:**

WCTV tower northern Leon co, FL (Tall Timbers Research Station reporting)
1955-1960 = 669 feet
1960 = new tower replaced 1,010 feet
1989 = tower shortened to 295 feet

IX. Behavioral Observations at the Tower: Yes _____ No √
Describe if applicable to statement or conclusion being evaluated.

X. Documentation of Weather Factors? Yes _____ No _____
Describe if applicable to statement or conclusion being evaluated.

Crawford and Engstrom controlled for weather and scavenger conditions.

XI. Inclusion of Structural and Landscape Conditions? Yes ____ No √
Describe if applicable to statement or conclusion being evaluated.

XII. Brief Description of Results

Examines relationship of tower height (3 towers at same site) to bird kills. Authors state that towers less than 295 feet may not present serious risk for bird collisions. Scavenger control recommended.

Mean mortality numbers = 1,517/year overall. With scavenger control the mean = 2,248 mortalities/year; without scavenger control the mean = 642.

XIII. Need for and Scope of Additional Studies (Only applicable if new data or study is provided.)

Are additional studies identified? Yes ____ No √ If yes explain and list studies.

XIV. Suggested Methods to Minimize Impacts (Only applicable if new data or study is provided.)

Are specific methods identified? Yes____ No √ If yes explain and list specific mitigative methods.

Primary Reference or New Data Review Sheet

I. Citation or Source:

Crawford, R.L. 1971. Predation on birds killed at TV tower. Oriole 36:33-35.

Source Type (check one): Study

Peer-reviewed Paper √ **Other (specify):**
Agency Report ____
Conference Proceedings ____

II. Study Objectives (list)

Descriptive summary of predation issues on bird mortalities at tower sites.

III. Species

N/A

IV. Study Methods (briefly list)

Tall Timber Bulletin Number 1 (1962) and Number 8 (1967) have detailed methodology for period 1955-1966.
Planted birds on tower site for 5 nights to monitor/calculate scavenging rates.

V. Duration of Study

Duration (provide dates):

Single Year 5 nights 21-27 Oct 1971
Multiple Years _____

Seasons:

Spring Migration ____ **Both** ____

Fall Migration √ **Yearlong** ____

Primary Reference or New Data Review Sheet (cont'd)

VI. Carcass Search Methods (if applicable)

Search Conditions: Daily ____ Weekly ____ Only after overcast nights with a low ceiling or storm events √

Other Periods (Describe):

Search Biases Evaluated, Including Observer Bias and Scavenger Activity? Yes √ No ____ Scavenger Removal

Search Area Described? Yes ____ No √

1955-1966/ 1971 5 nights = scavenger removal monitored.

VII. Analytical and Statistical Methods

Statistical method(s) used: (list)

N/A

Comments:

VIII. Number of Tower Sites: 1 **Proximity:**

WCTV tower northern Leon co, FL (Tall Timbers Research Station reporting)
1955-1960 = 669 feet
1960 = new tower replaced 1,010 feet

IX. Behavioral Observations at the Tower: Yes _____ No √
Describe if applicable to statement or conclusion being evaluated.

X. Documentation of Weather Factors? Yes _____ No √
Describe if applicable to statement or conclusion being evaluated.

Primary Reference or New Data Review Sheet (cont'd)

XI. Inclusion of Structural and Landscape Conditions? Yes ____ No √
Describe if applicable to statement or conclusion being evaluated.

XII. Brief Description of Results

Predation was high. Total predation rates (day and night) were 93% (147 of 157 birds). Great horned owls were the primary nocturnal scavengers, with common and fish crows scavenging diurnally.

XIII. Need for and Scope of Additional Studies (Only applicable if new data or study is provided.)

Are additional studies identified? Yes √ No ____ If yes explain and list studies.

Tower studies should account for predation and scavenger removal rates. Recommended strict predator control, early morning surveys, and whether drastic predator control measures are worth the data.

XIV. Suggested Methods to Minimize Impacts (Only applicable if new data or study is provided.)

Are specific methods identified? Yes____ No √ If yes explain and list specific mitigative methods.

Primary Reference or New Data Review Sheet

I. Citation or Source:

Crawford, R.L. 1978. Autumn bird casualties at a northern Florida TV Tower: 1973-1975. Wilson Bulletin 90(3):335-345.

Source Type (check one): Study

Peer-reviewed Paper √ **Other (specify):**
Agency Report ____
Conference Proceedings ____

II. Study Objectives (list)

Record age and sex data for 3, 223 birds killed during fall periods (Aug-Nov) of 1973-1975.

III. Species

3,864 bird mortalities reported; 109 species
Mass Mortalities:
17 Oct 1973 = (133); 5 Sep 1974 (134); 23 Sep 1974 (220); 17 Oct 1974 (971); 14 Sep 1975 (636); 15 Sep 1975 (486)
Aug-Nov only:
1973 = 261 birds; 57 species
1974 = 1,832 birds, 87 species (w/ predator control)
1975 = 1,771 birds; 90 species (w/ predator control)

IV. Study Methods (briefly list)

Almost daily searches. Reinstituted rigorous predator control in 1974-75, which explains increased carcass retrieval rates. Analyzed sex and age ratios.

V. Duration of Study 3 years

Duration (provide dates):

Single Year _____
Multiple Years 1973-1975

Seasons:

Spring Migration ____ **Both** ____
Fall Migration (Aug – Nov) √ **Yearlong** ____

Primary Reference or New Data Review Sheet (cont'd)

VI. Carcass Search Methods (if applicable)

Search Conditions: Daily √ Weekly ____ Only after overcast nights with a low ceiling or storm events ____

Other Periods (Describe):

Search Biases Evaluated, Including Observer Bias and Scavenger Activity? Yes √ No ____

Search Area Described? Yes ____ No √

Scavenger/predator removal program in place.

VII. Analytical and Statistical Methods

Statistical method(s) used: (list)

Variance test for homogeneity of the binomial distribution.

Comments:

VIII. Number of Tower Sites: 1-2 Proximity:

WCTV – Leon Co. Florida
1,008-foot, guyed TV tower (see Crawford and Engstrom 2001).
Steady and flashing red lights.
WCTV tower was focus, but these tower results compared to central peninsular tower (WDBO) by Taylor and Anderson, 1973.

IX. Behavioral Observations at the Tower: Yes _____ No √
Describe if applicable to statement or conclusion being evaluated.

X. Documentation of Weather Factors? Yes √ No _____
Describe if applicable to statement or conclusion being evaluated.

Most mortalities occurred following cold fronts.

Primary Reference or New Data Review Sheet (cont'd)

XI. Inclusion of Structural and Landscape Conditions? Yes ____ No √
Describe if applicable to statement or conclusion being evaluated.

XII. Brief Description of Results

Compared different types of species' migration. Authors state that differences in migration movement periods result in differences in mortality events (e.g., displaced female ruby-crowned kinglets).
Larger number of adults (earlier migrants) than immature birds recorded (Taylor and Anderson, 1973).
The two tower comparisons and sampling delineated different migration systems.

Strong inference to mass mortalities associated w/ cold fronts.
Suggests those species that migrate early are less likely to be impacted by cold fronts and hence collisions.
Also see Nolan and Mumford 1965.

XIII. Need for and Scope of Additional Studies (Only applicable if new data or study is provided.)

Are additional studies identified? Yes ____ No √ If yes explain and list studies.

XIV. **Suggested Methods to Minimize Impacts (Only applicable if new data or study is provided.)**

Are specific methods identified? Yes____ No √ If yes explain and list specific mitigative methods.

Primary Reference or New Data Review Sheet

I. Citation or Source:

Stoddard, H.L., Sr. 1962. Bird casualties at a Leon County, Florida TV tower: 1955-1961. Bull. Tall Timbers Res. Sta. 1:94.

Source Type (check one): Study.

Peer-reviewed Paper √ **Other (specify):**
Agency Report ____
Conference Proceedings ____

II. Study Objectives (list)

Initiate a long-term study of bird collisions w/ towers.
Record species and number of birds killed.
Document extent of scavenger removal of carcasses.

III. Species

15, 251 total birds; 149 species
See page 3 of report for listings of mass mortality kills.
Few to several species of bats recorded.

IV. Study Methods (briefly list)

Almost daily surveys.

V. Duration of Study 7 years

Duration (provide dates):

Single Year _____
Multiple Years 1955-1961

Seasons:

Spring Migration ____ **Both** √
Fall Migration ____ **Yearlong** ____